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PAPERS

IN

AGRICULTURE.

The GOLD MEDAL, being the Premium offered in Class 14 for Plantations of Forest Trees, was this Session adjudged to Dr. H. AINSLIE, M. D. of Dover Street, for his Plantations of 151,240 Forest Trees, at Grizedale in Lancashire. The following Communications were received from him.

SIR,

HAVING determined to plant a large Intack of 77 Acres 30 Perches, part of a barren common long since inclosed and fenced round with a stone-wall six feet high, I selected 16 acres of it which were much exposed, and planted them in the year 1807, with 22,700 Larches, 3,700 Oaks, and 2000 Scotch Firs. I expected these plants would break the force of the winds and protect those I might plant at a future period.

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The remaining part of this intack I planted in the Spring of 1809, with 96,150 Larches, 10,300 Scotch Firs, 3,400 Oaks, 1,990 Beech, and 1000 Spanish chesnuts. In the winter of the same year I filled all the vacant spots with 10,000 Larches;—the Plantation therefore contains 151,240 Forest Trees, of which 28,400 were planted in 1807 — 112,840 in Spring 1809, and 10,000 in the following Winter. The certificates I annex refer to the 112,840 planted in Spring 1809, but the whole are included in the expression of their flourishing state.

The Society will consider me as merely presenting them with an account of my having planted 112,840 Forest Trees upon 61 acres in the Spring of the year 1809; and I shall be happy if the following observations respecting the whole of my plantations for 22 years, should be thought deserving of their notice. The total of Forest Trees I have planted is 378,563.

I am, Sir,

Your very obedient Servant,

H. AINSLIE.

25, *Dover Street*, Nov. 29, 1811.

TO C. TAYLOR, M. D. SEC.

SINCE I had last the honour of presenting myself to the Society of Arts, &c. as a Candidate for one of their Honorary Rewards to planters of forest trees, I have not been idle in a pursuit which has given me so much pleasure. Unfortunately, however, I am tied down by my profession so closely to the metropolis, that I have only been able to visit my plantations once in two years, and never
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in one Season to dedicate more than a week or ten days to their management. This time, short as it is, has not been thrown away, and as what I have done has answered my expectations, it may meet the wishes of the Society to be made acquainted with it;—and I am the more induced to submit some observations to them, because I find in their Annual Publications, many accounts of putting trees into the ground, but few of their treatment afterwards.—Upon subsequent treatment, however, every thing depends, for I agree with an old gentleman who many years ago told me, that any fool could plant, but only a wise man could rear timber. The difficulties I felt in my first attempts would have been much lessened had I sooner had the advantage of seeing the excellent papers presented to the Society by Mr. Waistell, published in their 26th Vol.;—they have been invaluable to me, and cannot fail to prove so to all planters.

I cannot express the mortification I felt in passing some large plantations of Firs, in my way to and from the North of England last year. For thirty years, I can venture to say, no axe has been near them, and the trees now stand disgraceful poles forty feet high and at three and four feet asunder. These trees never will be timber.—I saw Oaks in the same predicament, as close as they usually stand in nurseries twenty-five or thirty feet high, and not three inches in diameter—I cannot perceive any merit in such sort of planting—No man will ever plant to profit who does not go through his plantations early with an axe in his hand and a cold calculating heart. Nothing can be more unpleasant than to cut down a thriving tree, but it must be done, or you will have no timber. I have not hitherto thinned my plantations on any regular principle, nor do I know any mode I could recommend under all circum-

stances. It is to be recollected that I speak of plantations of larches and firs planted four feet asunder. I had permitted my earliest plantations to grow without attention to them for ten or twelve years. I found the trees choking each other, and set about correcting my error the best way I was able. I cut down about a fourth part of them. For two or three years they increased little in girth, but shot up near two feet annually. I cut down a fourth of the remainder. In two years more they were much improved, but many of them had a rigidity in the bark, which is an infallible sign of their being too close. I again thinned them more moderately, and in two years the bark was burst in almost every tree. One tree which I measured at six feet was actually increased in circumference five inches. This plantation was in the centre of a copse and particularly well sheltered. All my other plantations are more exposed, and not being so much drawn up, were taken in time, and have cost me little trouble. The plan I now pursue, is to begin thinning in eight years. I mark the rows of inferior trees, which are always to be found, and cut them all down. I cross in every direction, as the smaller trees present themselves, and wherever I find a weak plant, it falls. The first thinning takes away about one in four. In two years more I attack them again. I cut down every row of second rate trees, and when I come to a parcel of equal size, I cut down one in three. Proceeding in this manner, cutting down one tree in four at each thinning, I find I give sufficient air, but never too much; regularity I utterly neglect, because after three or four thinnings, the trees are certain to be at proper distances. I will now mention the effect of this treatment :—My larches of twenty years growth average from twenty-two to twenty-

twenty-four inches in circumference at six feet. The Scotch firs in favourable situations do the same; in very exposed ones the average is from seventeen to twenty. The height of the former is from thirty-six to forty feet, of the latter from thirty to thirty-six feet. I purpose to thin these plantations again in 1812, and 1815, at which latter period they will be twenty-six years old, and every tree will contain six feet of square timber, and many of them upwards of ten. There will then be about seven hundred on each acre, the subsequent treatment of which will depend upon circumstances I cannot at present foresee. My larches of fourteen years growth, which were thinned in good time, average from fifteen to eighteen inches in circumference at six feet, so that I have not the least doubt of their far exceeding my first plantations*. I said, that the tall firs I saw in the North Road *never* would be timber, and I think I can prove it from what has occurred to myself. I have two hundred Scotch Firs, which are about sixty years old; when they were thirty-five years old they had never been thinned, and were nearly fifty feet high, with very little head. These trees have been carefully thinned at intervals; they now, at sixty years, average fifteen feet of timber only. What they would have contained had they been treated properly, may be known from viewing about a score of them planted in a hedge-row adjoining, each of which

* In the Bishop of Landaff's report of his first larch plantations, then twenty or twenty-one years old, I find that the circumference at six feet was on an average eleven inches. They are on *very high and exposed* ground. Mr. Curwen mentions his having used larches sixteen years old for his rail-roads, and says they squared $4\frac{1}{2}$ or 5 inches each. A tree which squares 5 inches, must be 21 inches in circumference.

contains between forty and fifty feet of timber. Had I cut down these Firs twenty-six years ago, I should have had four times the number of Larches nearly the same size upon the ground they at present cover. I formerly mentioned that the utmost value of the land I had planted, was 1s. or 1s. 6d. an acre, per annum. As I have generally selected intacks already well fenced, the expense of fencing has been inconsiderable. I have within the last twenty-one years, planted 378,563 Forest trees; about 25 or 30,000 Larches, surround my copse woods, the rest are in clumps of unequal dimensions, from seventy-seven acres to half an acre. The whole expense of plants, planting, fencing, and preserving, with compound interest, does not exceed 1000/. It is no idle speculation to look forward to what may be the value of 50,000 Larches, of forty years growth, nor to what the thinnings of the plantations may produce in the interim; and I trust it will be found that I have converted bad land to a good purpose, at as little expense as any planter in the kingdom.

As I have not confined myself to planting Larches and Firs only, but have also planted many thousands of Oak, Ash, Beech, and other trees, I would add a few words upon my management of Oaks. My plan has been to mix them with Larches and Firs, and to cut them down to the ground in about three years, and I find in a few years more, that they spring up in abundance, and shew themselves on the first thinning of the Larches. In two or three years I give the Larches a much more severe thinning, so as to leave the Oaks plenty of room, and I find that they shoot up rapidly. The land is much too high and exposed, to permit Oaks to grow without the protection of Larches; but the soil is so much improved by the dead leaves, grass, and fern, that I have not the least
doubt

doubt of rearing very fine Oaks on this poor land. In compliance with the request of Mr. Waistell, I have measured a great number of Larches of different ages, and shall continue to do so for some years to come. My intention is not to take trees promiscuously, but those I should call the second best in each plantation, as there are always twice the number of that kind, that can possibly be left to stand for timber, and all the inferior trees will of course be cut down first. I shall not fail to inform the Society if any thing occurs in the course of my experiments worthy to be communicated, or likely to be of service.

H. AINSLIE.

Dover-street, Nov. 29, 1811.

CERTIFICATES.

The following Certificates have been received, in corroboration of Dr. Ainslie's account of his Plantations.

I, WILLIAM DIXON, farmer to Dr. Ainslie, in Grizedale, do certify, that in the spring of the year 1809, I planted for him in an inclosure called Great Intack, containing sixty-one acres, 112,840 Forest trees, viz. 96,150 Larches, 10,300 Scotch Firs, 3,400 Oaks, 1,990 Beeches, and 1000 Spanish Chesnuts; and in the course of the following winter, filled up the ground with 10,000 additional Larches, making in all, 122,840 trees; and that I have constantly overlooked the above plantation, which is at this date, November 27, 1811, in a flourishing condition.

Signed,

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WILLIAM DIXON.

The

The Rev. THOMAS CLARKE, of Satterthwaite, and JOHN ROMNEY, Esq. of Woodstocke Hall, near Ulverston, wrote to the Secretary, confirming the foregoing Certificate, as to the healthy, and flourishing state of Dr. Ainslie's plantations, and that the same are well fenced.

The GOLD MEDAL, being the Premium offered in Class 39, for gaining Land from the Sea, was this Session adjudged to JOHN AUSTIN, Esq. of Grange, near Strabane, in Ireland, from whom the following Communication was received.

SIR,

I BEG leave to inform you, that by a gentleman who was lately in London, and who got a few days ago one of the premium books of the Society of Arts, &c. for 1810, I observe that there was bestowed to J. Stockdale, Esq. of Cark, Lancashire, and R. Towers, Esq. of Dudden Grove, Cumberland, for gaining five hundred and sixty-four acres of land from the sea, at Windermere, Lancashire, Class 34, their Gold Medal. This information of the Society, induces me to request you will have the goodness to inform the Society, that I trust they will consider my claim, in having in 1806, embanked about three hundred Scotch acres of a swampy marsh, on the lands of Grange, in the county Tyrone, situated on the Foyle, which runs past London-Derry, distance from the city $6\frac{1}{2}$ miles, over which at spring tides the whole surface was covered;

covered, and frequently by neap tides also, which rendered the entire marsh nearly useless; covering it from one to four, and sometimes five feet deep of water. *By the embankment*, and drains from six to four feet in depth, together with necessary roads, the land is now in good cultivation, giving in meadow grass, from three to four tons of hay per acre; the same is lett at an average of 6*l.* per acre; other parts are in oats and potatoes, generally productive; and remainder in the act of being reclaimed. Also in 1808, I embarked at the same place, and attached to the former improvement, an island and marsh, containing nearly one hundred acres; and now on the marshy land, over which boats of large burden plyed, oats have been reaped this season, worth 10*l.* per acre, and some even sold at eleven. These works have been done at a most serious expense, almost ruinous to me; but I should feel much gratified in being noticed by your highly dignified Society, in any manner they may think me worthy, and would wish in person to lay before them such proofs as you think necessary for their further satisfaction; and hope you will have the goodness to let me know, what time in October I may be permitted to wait on the Society.

I have the honour be,

with much deference and respect

to your Honourable President and Society,

Your obedient,

and very humble servant,

JOHN AUSTIN.

Grange, near Strabane, Sept. 21, 1811.

TO C. TAYLOR, M. D. SEC.

CERTIFICATES.

CERTIFICATES.

The following Certificates were sent to the Society, in corroboration of Mr. Austin's statement.

WE the undernamed do certify, that Mr. John Austin, of Grange, parish of Donaghedy, Barony of Strabone, county of Tiron, did in 1806 commence the embankment of the low lands of Grange, situated on the river Foyle, distant from Derry about seven miles; over which at spring tides the whole surface was covered, and frequently at neap tides also; which rendered the ground nearly useless, covering the surface from one to three, four, and sometimes five feet of water; and by completing the embankment, together with draining, making of roads, &c. through the same, the land is now in good cultivation, that which is in meadow giving from three to four tons of hay per acre, other parts of it in oats and potatoes generally productive. Also in 1808, that he embanked at the same place and attached to the former improvement an island and marsh containing about one hundred acres; and on the marsh where boats of large burthen formerly plied remarkable good oats have been reaped this season; the whole land enclosed being rendered extremely productive from its low marshy state of waste. We beg leave to recommend Mr. John Austin, from his industry, care and attention, in accomplishing the same, as worthy the attention of your highly honourable Society. November 19, 1811.

STEWART HAMILTON, Rector of Camas.

ARTHUR HAMILTON, Rector of Donaghedy.

J. HAMILTON, Collector of Strabane.

JAMES HAMILTON, Justice of Peace for Tyron.

TO C. TAYLOR, M. D. SEC.

MY

MY DEAR DOCTOR,

THE gentleman who will have the honour of delivering you this letter, is Mr. Austin, of Grange, in the county of Tyrone; he has embanked a very considerable quantity of land that was subject to be flooded by the river Foyle, and has had great crops of corn where snipes used to occupy the land. He wishes to obtain the gold medal from the Society of Arts, &c. in London.

I remain,

My dear sir,

Yours always very truly,

R. FOWLER.

Urney-House, Dec. 9th, 1811.

TO DR. RICHARDSON.

THE REV. ARCHDEACON FOWLER who writes this letter, and recommends Mr. Austin so strongly, I am confident would not do it without full conviction of his merit, and knowledge of the value of the improvement from inspection.

W. RICHARDSON.

Clonfeele-House, Jan. 31, 1812.

TO C. TAYLOR, M.D. SEC.

DEAR SIR,

THIS will be delivered to you by Mr. Austin, who has reclaimed much land from the tide-water in the county of Tyrone,

Tyrone, and I believe is well entitled to a premium, which Society of Arts, &c. have liberally offered to this country as well as to England.

I have the honour to be,

Your most obedient humble servant,

C. VALLANCEY.

V. P. of the Dublin Society.

Dublin Society, Feb. 6, 1812.

TO C. TAYLOR, M. D. SEC.

HAVING been employed by the Post Masters General, to lay out, and improve, the post roads between Drogheda and London-Derry, I had an opportunity particularly to examine a work of magnitude and importance which I understand was commenced and completed by Mr. John Austin, at Grange, in the county of Tyrone, by enclosing, with an embankment, some hundred acres of marsh on the banks of the river Foyle, which appears to me to be very well and effectually executed, the whole of the said inclosure having been last summer under the heaviest crops of oats and meadow grass I think I have ever seen, and it is evident the entire of the said inclosure was never productive before.

CHARLES COOTE.

Bagget-st. Feb. 12, 1812.

SIR,

SIR,

I HAVE been favored with yours of the 5th instant; it was my signature that was to Mr. Austin's memorial, and I can give the most unequivocal testimony to the truth of his statement, for his improvements are within five miles of my residence, and I have frequently witnessed them, both in progress, and since their completion, with much pleasure and satisfaction.

I have the honour to be,

Sir,

Your obedient servant,

J. HAMILTON.

Strabane, March 14, 1812.

TO C. TAYLOR, M. D. SEC.

The GOLD MEDAL, being the Premium offered in Class 41, for improving Land lying waste, was this Session adjudged to Dr. FRANCIS HAGGITT, D. D. of Durham, for his Improvement of fifty Acres of Boggy Land, at Pittington, near Durham. The following Communication was received from him.

AN account of fifty acres of bog redeemed by under-draining, in the parish of Pittington, in the county of Durham.

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The farm called Little Town, in the parish of Pittington, about four miles from Durham, contains fifty acres of land, which were till lately a morass, producing nothing but insulated tufts or hillocks of very coarse grass, and a few stunted salallows, and on which cattle could only go in dry summers; the annual value of the land in that state was, at most, two shillings and six-pence per acre.

Dr. Haggitt (who has only a life interest in the estate as a Prebendary of Durham) had long wished to under-drain this bog, but was dissuaded from the undertaking, on the supposition that a sufficient fall could not be obtained. At length, however, he determined to make the trial, and accordingly began the work in January, 1810, and completed it in July 1811. The drains vary in depth from three to seven feet, according to circumstances, and are laid in the conduit form with side-stones, and a cover, and (wherever it appeared necessary) with flag-stones at the bottom, forming an open space of seven inches by five for the passage of the water. But a difficulty occurred in many places on account of quick-sands, which were so loose and soft that the stones would have sunk in them; to obviate which, planks were laid at the bottom for the side walls to rest upon, with shoulders to prevent the stones from slipping inwards on the boards; and by this contrivance any dislocation of the drain was effectually prevented.

The soil, which is now laid perfectly dry, proves to be a rich strong loam; and the tenant, William Lynn, although he had a lease of the farm, of which several years are unexpired, consented to give immediately forty shillings per acre for the newly-drained ground; and accordingly he now pays one hundred pounds per annum for the fifty acres before-mentioned, which is considered a very moderate

moderate rent, although the rest of the land on the same farm is let below the average of twenty shillings per acre. The drained ground has been since divided into seven fields, by quick-set hedges. Most of it has been ploughed (at first with great difficulty) and is intended to remain in tillage; and has already produced good crops of oats or turnips.

The whole expense of cutting the drains, quarrying and leading the stones, laying and filling-in, amounted to 822*l.* 2*s.* 4*d.*; and the timber for planking cost 25*l.*

FRANCIS HAGGITT.

Durham College, Jan. 21, 1812.

TO C. TAYLOR, M. D. SEC.

CERTIFICATES.

I HEREBY certify, that I set out and superintended the work described in the foregoing statement, and that the account of the state of the ground before draining, the value since the drainage, the manner and expense of the operation, and all the particulars mentioned in the foregoing statement are true. As witness my hand,

M. WOODIFIELD, Surveyor.

Durham College, Jan. 21, 1812.

I, WILLIAM LYNN, the tenant of Little Town farm, in the parish of Pitlington, and county of Durham, do hereby certify, that there were fifty acres of drowned swampy ground in my farm, which, on account of its wet state, could only be stunted by young cattle about two months in the year; it is now completely underdrained by stone conduits, and the improvement is so great, that I have

have agreed to give a rent of forty shillings per acre for it, for the residue of my term in the farm. Given under my hand this 21st day of January, 1812.

W. LYNN.

The LESSER SILVER MEDAL of the Society was this Session voted to Major BRYAN HESLEDEN, 1st West York Regiment, for improving twenty-one Acres of Boggy Land, at Clapham, in the County of York. The following Communications were received from him, a wood Engraving is annexed, and the original plans are preserved in the Society's Repository.

SIR,

I REQUEST you to lay before the Society of Arts, &c. the following improvement in agriculture; namely, the converting of a quantity of morass or boggy marsh, which had been hitherto perpetually covered with water, into good pasture and grazing land, by means of drains, &c. This I accomplished in the course of last year, at a considerable expense; the mode I adopted, and other particulars of the undertaking, I have inclosed in this letter, they are authenticated by the surveyor, clergyman, and other inhabitants of the parish where the same is situated. I hope the bringing of so much land into cultivation, which till then had been useless and of no value whatever, will be deemed worthy of the attention of the Society.

Society. The execution had been thought impracticable, from its being surrounded on all sides by a hill.

I have the honour to remain,

Sir,

Your obedient humble servant,

BRYAN HESLEDEN,

Major 1st West York Regiment.

Portchester Castle, May 24, 1811.

TO C. TAYLOR, M. D. SEC.

THE following method has been adopted for the improvement of a piece of morass or marshy ground, called the Tarn, which before was constantly laid under water, (for the form of it see the annexed plan) and surrounded on all sides by a hill. A leading or main drain has been carried through it, commencing at the south-east, and terminating at the north-west extremity; in effecting this, hitherto supposed impracticable, though desirable object, considerable expense was incurred, on account of its great length and depth, the former being upwards of one hundred and sixty yards, and the latter from six to twelve feet, attended with additional expense, as well as the difficulty of cutting through rocks in several parts of its course; this arduous and expensive undertaking being accomplished, it was deemed indispensably necessary, that cross drains should be cut in such a manner as to form a junction with the main drain, the said drains being from seven to ten yards distance from each other, and a yard deep, flagged in the bottom, soughed and walled with stone, at least eight inches from the bottom, and covered with flat stones, and afterwards filled up with earth.

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The main drain, including the cross ones, makes a total of 8,520 yards of draining, or thereabouts: and in order to bring it into pasture and meadow ground, between two and three thousand horse loads of lime have been spread upon it, each load being from six to eight yards distance from each other, according to the quality of the soil.

CERTIFICATES.

I do hereby certify, that a certain piece of ground called the Tarn, in the parish of Clapham, and county of York, containing twenty-one acres, three roods, and ten perches, has been improved by Major Hesleden, as before described. As witness my hand this 28th day of February, 1811.

(Signed) JOHN MATTHEW HODGSON, Surveyor, inhabitant of Clapham.

THIS is to certify, that Bryan Hesleden, Esq. Major in the 1st West York Regiment of Militia, has completely drained, improved, and converted into good land, a marsh, which was before perpetually covered with water, forming a lake of twenty-two acres, or thereabouts, called the Tarn, situated in the parish of Clapham, and county of York. Witness our hands this 28th day of Feb. 1811,

JOHN WHALEY, Curate of Clapham.

THOMAS FOSTER, and EDMUND ROBINSON, Landholders.

WILLIAM LUPTON, Church-Warden, Clapham.

SIR,

SIR,

HAVING been informed that the session of the Society of Arts, &c. is about to commence, I take the liberty of addressing you again on the subject of my becoming a candidate for a premium, for the improvement of a certain extent of land, called the Tarn, situate in the parish of Clapham, in the West Riding of Yorkshire, the particulars of which I have already had the honour of transmitting to you in May last. I beg leave to remark further on the subject, that although the land so improved does not consist of more than twenty-one acres, (which was all that remained in that uncultivated state) I trust it will be found to deserve equal merit, as if there had been a greater quantity, since, if there had been more waste, of course I should have completed the whole by the same method I have before described. The land so improved is now enclosed, and the whole of it in grass. Its annual value I consider worth from two pounds fifteen shillings, to three pounds an acre, for either mowing or grazing, (that is for feeding of cattle) thereby gaining and bringing so much land into use for the community, which had till then been a mere waste, absolutely uncultivated, and looked-on as impracticable to drain, &c. from its being surrounded by a hill. I have a plan of the same, which I can transmit to you, should it be thought necessary, and I shall be happy to give any further explanation, with respect to the expenses attendant on, or mode of draining, &c. &c. that may be required, either by letter, or even attendance in town.

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In the mean time you will oblige me in laying the particulars of my claim before the Society.

I have the honour to remain,

Sir,

Your obedient humble servant,

BRYAN HESLEDEN,

Major 1st West York Regiment
of Militia.

Chatham Barracks, Oct. 21, 1811.

TO C. TAYLOR, M. D. SEC.

SIR,

I Take the liberty of transmitting to you, enclosed along with this, a plan of the Tarn, shewing the operation of draining it, &c. &c. together with some further remarks relative to the mode adopted throughout, as also a few hints of my own which I have been able to collect from experience, in this instance, as well as in the improvement of other lands in Yorkshire. I shall feel happy in their proving serviceable to the public, however to land improvers I trust they will be found beneficial. This plan, and other particulars, together with the account sent in my last, I conclude will sufficiently explain every thing requisite to the Society, to whom you will be pleased to present them.

I have the honour to remain,

Sir,

Your obedient humble servant,

BRYAN HESLEDEN,

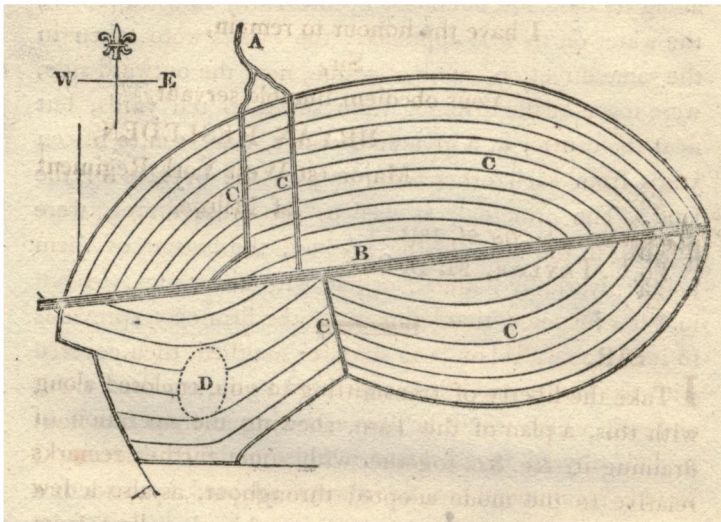
Major 1st West York Regiment
of Militia.

Chatham Barracks, Nov. 11, 1811.

TO C. TAYLOR, M. D. SEC.

A Plan

A Plan of Major HESLEDEN's Method of Draining the Morass, called the Tarn, at Clapham, in Yorkshire.



EXPLANATION.

- A A spring of water.
- B The main drain.
- C C C C C Drains of a smaller size in different directions.
- D A small piece of dry ground.

Particulars relative to the Drainage of the Tarn, shown in the above Plan.

THIS plan describes the direction in which the principal or main drain, as also the cross drains, were severally carried. From its being encompassed on all sides by

rising ground, the water was observed to spring from the bottom of the hill; consequently the first drain was taken along its base and boundary of the Tarn, so as to receive the water on its first approach; the others were taken in the same direction, some of which, near the outward side, were made at the distance from seven to ten yards, but near the centre, at a greater distance, (viz.) ten to fifteen yards from each other according to the dryness of the land. The principal, as well as the cross drains, were finished in the best possible manner, the bottom of them being invariably flagged, or laid with flat stones, (except in a few instances that happened to be firm clay,) previous to its being walled on both sides, or soughed, then covered with flat stone, and afterwards filled to the top with earth and sod, which would be above the stone from one foot to half a yard in thickness. This mode of draining I would recommend to be always adopted, provided a sufficient quantity of stone can be procured, even if the expense attending it should be somewhat great, since it evidently must ensure its durability almost for ever,—when in the ordinary way of draining, without first flagging, or laying the bottom with stone, it will in no great space of time give way by undermining the walling, or soughing part, besides being more liable to fill or choke up with earth or sediment. It would also be advisable to adopt (as was done in this instance with good effect) the letting, in lots, of a given number of roods each, the cutting, stone-digging, soughing, or walling, &c. to different workmen; as best calculated to ensure the well finishing and due performance of each work.

The draining being completed, covered, sodded, and levelled, and the same covered with lime, in the proportion before-described, and after adopting the greatest
economy

economy in the expenditure of this undertaking, the whole expense will be nearly as follows :

	£.	s.	d.
The main drain, cutting and blowing up of the rock, and carrying through the hill, (the extent and depth described in a former account) so as to gain a sufficient fall	-	92	15 0
The cross and other drains, in the Tarn	-	181	7 0
Covering the whole with lime	-	91	0 0
		<hr/>	
	£.	365	2 -0

Although in the statement before made, I calculated the value of the land, in its improved state, to be worth, for the first two or three years, only from two pounds ten, to five pounds fifteen shillings per acre, I have not the least doubt, from the experience I have already had in laying lime upon the surface of land of that description, and in the same neighbourhood, that from the end of the first three years, it will be worth afterwards, and for some time, (for grazing or fattening of cattle) from three pounds ten, to three pounds fifteen shillings per acre, consequently paying for the money so expended, at least eighteen or twenty per cent.

BRYAN HESLEDEN,
Major 1st West York Regiment
of Militia.

SIR,

AGREEABLY to your request of the 5th instant, I avail myself of the earliest opportunity of informing you, that

the account delivered to you by Major Hesleden, bearing my signature, respecting the draining and improving of a certain parcel of land (twenty-one acres) situate in the parish of Clapham, is correct; I did not sign it from the statement of others, but was enabled to attest its truth from accurate observation. The Morass or Tarn, now converted into fine arable land, will, I am persuaded, induce other gentlemen in the vicinity to adopt a similar mode of improvement, now they are convinced to what perfection such like land is capable of being brought. Major Hesleden is strenuous in cultivating some of his other estates, and employs a great number of the labouring poor in draining, &c. leaving the merits of his claim to be appreciated by your honourable Society.

I remain,

most respectfully,

Sir,

Your obedient servant,

JOHN MATTHEW HODGSON.

Horton, in Ribblesdale, near Settle, Yorkshire,

March 12, 1812.

TO C. TAYLOR, M. D. SEC.

The

The LESSER SILVER MEDAL was this Session voted to J. H. MOGGRIDGE, Esq. of Laurumney, near Newport, Monmouthshire, for his Experiments and Remarks on the growth of Forest Trees. The following Communications were received from him.

DEAR SIR,

I HAVE inclosed a table of observations made on the growth of trees by a very intelligent friend of mine, Mr. Moggridge, (late High Sheriff for the county of Gloucester) which I could wish Mr. Waistell to see, and will, I think, be found well deserving of the Society's attention.

I am,

Dear Sir,

Yours very respectfully,

SAMUEL GALTON.

*Duddeston, near Birmingham,
May 24, 1810.*

TO C. TAYLOR, M. D. SEC.

Admeasurements

AGRICULTURE.

Admeasurements of the progressive growth of Timber Trees by Mr. John H. Moggridge, in a Plantation of four Acres made by him, in the year 1798.

	1805. April 11.	1805. Aug. 22.	1806. July 1.	1806. August.	1807. June.	1808. June.	1808. Oct. 3.	1809. June.	1809. October.		Height October 1809. Feet.
Larch east side	1 3	1 6	1 8 $\frac{1}{2}$	1 9 $\frac{1}{2}$	1 11	2 2 $\frac{1}{2}$	2 4 $\frac{1}{2}$	2 4 $\frac{1}{2}$	2 4 $\frac{1}{2}$	1 7	27
Pinaster -	1 0 $\frac{1}{2}$	1 3	1 5 $\frac{1}{2}$	1 6 $\frac{1}{2}$	1 8 $\frac{1}{2}$	1 11	2 0 $\frac{1}{2}$	2 1 $\frac{1}{2}$	2 4	1 4	22
Asp -	1 0	1 1 $\frac{1}{2}$	1 2 $\frac{1}{2}$	1 3 $\frac{1}{2}$	1 3 $\frac{1}{2}$	1 4	2 4 $\frac{1}{2}$	1 4 $\frac{1}{2}$	1 5	1 4 $\frac{1}{2}$	32
Plane -	0 10	0 11		1 1 $\frac{1}{2}$	1 1 $\frac{1}{2}$	1 4 $\frac{1}{2}$	1 6 $\frac{1}{2}$	1 7 $\frac{1}{2}$	1 9 $\frac{1}{2}$	1 4	34 $\frac{1}{2}$
Ash -	1 0	1 2		1 3 $\frac{1}{2}$	1 3 $\frac{1}{2}$		1 4 $\frac{1}{2}$	1 5	1 5 $\frac{1}{2}$	0 10 $\frac{1}{2}$	32
Asp -	1 1 $\frac{1}{2}$	1 3	1 3 $\frac{1}{2}$	1 4 $\frac{1}{2}$	1 4 $\frac{1}{2}$		1 5 $\frac{1}{2}$	1 6 $\frac{1}{2}$	1 6 $\frac{1}{2}$	0 11 $\frac{1}{2}$	30
Birch -	0 11	0 11 $\frac{1}{2}$	1 1	1 1 $\frac{1}{2}$	1 1 $\frac{1}{2}$		1 3	1 3 $\frac{1}{2}$	1 4	1 0	26
Beech -	0 8 $\frac{1}{2}$	0 9 $\frac{1}{2}$	0 9 $\frac{1}{2}$	0 10 $\frac{1}{2}$	0 10 $\frac{1}{2}$		1 0 $\frac{3}{4}$	1 1 $\frac{1}{4}$	1 2 $\frac{1}{4}$	0 9	20
Spruce -	0 7 $\frac{1}{2}$	0 9	0 10 $\frac{1}{2}$	0 10 $\frac{1}{2}$	0 10 $\frac{1}{2}$		1 0	1 0 $\frac{1}{2}$	1 0 $\frac{1}{2}$	0 9	24
Spanish Chesnut	0 10	0 10 $\frac{1}{2}$	0 11 $\frac{1}{2}$	1 1 $\frac{1}{2}$	1 1 $\frac{1}{2}$	1 3 $\frac{1}{2}$	1 4 $\frac{1}{2}$	1 5 $\frac{1}{2}$	1 6 $\frac{1}{2}$	1 0	25
Plane -	0 8 $\frac{1}{2}$	0 10	0 11 $\frac{1}{2}$	1 0 $\frac{1}{2}$	1 1 $\frac{1}{2}$	1 3 $\frac{1}{2}$	1 5 $\frac{1}{2}$	1 6 $\frac{1}{2}$	1 8 $\frac{1}{2}$	1 2 $\frac{1}{2}$	29
Pine -	0 7	0 7 $\frac{1}{2}$	0 8 $\frac{1}{2}$	0 9	0 9 $\frac{1}{2}$		0 11	0 11	0 11	0 8	24
Asp -	1 3 $\frac{1}{2}$	1 5 $\frac{1}{2}$	1 6 $\frac{1}{2}$	1 7 $\frac{1}{2}$	1 8	1 9 $\frac{1}{2}$	1 10 $\frac{1}{2}$	1 11 $\frac{1}{2}$	2 0	1 4 $\frac{1}{2}$	39
Larch -	0 11 $\frac{1}{2}$	1 1 $\frac{1}{2}$	1 3	1 3 $\frac{1}{2}$	1 5 $\frac{1}{2}$	1 7 $\frac{1}{2}$	1 8 $\frac{1}{2}$	1 9 $\frac{1}{2}$	1 9 $\frac{1}{2}$	1 4	34
_____	1 0	1 2 $\frac{1}{2}$	1 3 $\frac{1}{2}$	1 4 $\frac{1}{2}$	1 5 $\frac{1}{2}$	1 6 $\frac{1}{2}$	1 7	1 7 $\frac{1}{2}$	1 8 $\frac{1}{2}$	1 3	27
_____	1 1	1 2 $\frac{1}{2}$	1 4	1 5 $\frac{1}{2}$	1 6 $\frac{1}{2}$	1 7 $\frac{1}{2}$	2 0	2 1	2 1	1 0	27
_____	1 2	1 4 $\frac{1}{2}$	1 5 $\frac{1}{2}$	1 6 $\frac{1}{2}$	1 7 $\frac{1}{2}$	1 7 $\frac{1}{2}$	2 0	2 1	2 1	1 5 $\frac{1}{2}$	30
_____	1 1	1 2 $\frac{1}{2}$	1 4	1 5 $\frac{1}{2}$	1 6 $\frac{1}{2}$	1 7 $\frac{1}{2}$	1 8	1 9	1 9	1 2 $\frac{1}{2}$	28
_____			1 3	1 5 $\frac{1}{2}$	1 5 $\frac{1}{2}$	1 6 $\frac{1}{2}$	1 9 $\frac{1}{2}$	1 11	1 11 $\frac{1}{2}$	1 0	26
_____				1 3	1 5 $\frac{1}{2}$	1 6 $\frac{1}{2}$	1 8 $\frac{1}{2}$	1 9 $\frac{1}{2}$	1 10 $\frac{1}{2}$	1 3	31

The

The foregoing is a table of actual admeasurements made of trees as fairly as possible, selected as specimens of the average growth of their respective sorts, composing a plantation of four acres made in the year 1798, on a soil, and under circumstances of peculiar difficulty. The experiment was intended to decide what sort of tree would best suit the soil on which the trees were planted, and their relative and progressive, or periodical, growth. The result will be found to confirm the accuracy of Mr. Waistell's ingenious tables in a former volume of the Society's transactions, excepting that the average growth in height considerably exceeds his statement, and, as far as this instance goes, increases the expectation of a still more satisfactory return of profit to the planter.

SIR,

I FIND Mr. Galton of Duddeston, (to whom I am much indebted for this mark of his regard), has done me the honor to communicate to you some particulars of admeasurements of young timber trees which I sent him last winter. I have endeavoured, by my answers to your queries on the subject, to elucidate the hasty sketch I sent Mr. Galton. My object, in making and keeping the register, was to ascertain the comparative growth of different trees on the same soil, as well as their respective growth at different periods; and I made, as far as I could judge at the time, a fair selection in proportion to the numbers of each sort planted for that purpose; certainly my success in this instance has been to the astonishment and admiration of every beholder acquainted with all the circumstances attendant

tendant on the experiment ; and when I say that planting is with me a favorite pursuit, which, in the season, occupies most pleasantly and healthfully not only my head, but my hands ; I need scarcely add, that my gratification has been very great, though, I must confess, capable of increase by any notice which may be taken of my humble endeavours by your most respectable and truly patriotic Society. As I have been restrained from planting on a large scale on my estate here, by the productiveness of the soil, in articles of animal food, I was deterred from offering myself to the notice of your Society, by the consideration of the comparative insignificance of my attempts with many of those splendid undertakings recorded in the volumes of the Society ; hoping also, at a period not very distant, from the result of my experience, now in a state of progress, on a much larger scale, on my property in Monmouthshire, to have it in my power to offer some important facts and conclusions deserving of that notice which Mr. Galton has so unexpectedly directed to my efforts here. Any further information in my power to give, it will be my pride and pleasure to furnish, knowing of no gratification superior to that of the advancement of the peaceful and beneficial arts of civilized life.

I am, Sir,

Your obedient and humble Servant,

JOHN H. MOGGRIDGE.

The Boyce, near Gloucester, June 30, 1810.

To C. TAYLOR, M. D. SEC.

Answer

Answer to Dr. Taylor's Queries on the subject of the Growth of Timber in my Plantation.

1st.—In the table I had the pleasure to draw out for Mr. Galton, the first nine columns contain the circumference of trees taken in feet, inches, and quarters, in the months and days mentioned at the tops of the columns, and in the years also there marked. These admeasurements were taken at three feet from the ground.

2d.—The last column contains the height of the same trees, (to the beginning of that year's shoot), when measured in October 1809. The figures in the next preceding column register the mean circumference of each of the said trees, and this was obtained, (the whole height being first ascertained), by measuring the circumference at one half the height. This column I added, in order that any person who chose might, in the table, possess all the requisite means of calculating the actual content of each tree; and then, by the aid of Mr. Waistell's rules, the accuracy of which for every *safe* and practicable purpose I have, from careful comparison of facts, no doubt of), also calculate what the contents would be at any future period.

3d.—The soil on which the trees in question were planted, appeared to be of the most unpromising kind. In forming a canal through my grounds about four acres, (the scite of this plantation), were covered with the sub-soil excavated from excessive deep cutting in the approach to the mouth of a long tunnel. The substance raised in irregular heaps, some not less than twenty feet above the natural surface, consisting chiefly of a sort
of

of argilacious marle, containing by analysis, very small proportions of calcareous matter, and silex combined with argil, the stubbornness and infertility of this soil, after the lapse and exposure of several years, occasioned it still to remain nearly as at first, combined in hard and stubborn lumps, and was as bare as ever of any vegetable production either of grass or weeds. My first intention was to reduce the heaps into some comely shape, and clothe them with herbage; but I found the attempt so expensive, chiefly from the circumstance of this substance not permitting the free use of the spade, but mostly requiring to be first loosened by the mattock, that after levelling about half an acre, I desisted; and in the year 1798, resolved to plant about an acre by way of experiment, having no analogy to reason from, and uncertain what, or if any trees would grow, I planted most of the sorts of well known forest trees. My method was to stock, and then throw out the soil from a hole or pit about two feet diameter and one foot deep. From heaps of native soil carted from the adjoining field, I deposited to the depth of two inches in the bottom of the hole, on which the plant being placed, the roots were bedded in about half a wheel-barrow full of the same earth, the surface of the hole being finally left two inches below the general surface of the plantation. The plants were set out nearly one yard a-part. The scite of the plantation was a long, narrow, undulating stripe of ground, of different widths, and running in length, with some little variation, north and south. The canal, from fifteen to thirty feet below the surface of the plantation, formed a sufficient defence to the east, on the west, and on the two ends, north and south. I have raised (planted with similar care)

a good

a good hawthorn fence, defended from the first by post and single rail upon the bank, with an additional guard of thorns stuck into the bank for the first two years. The trees were mostly of the height of from two feet to four feet when planted, their age I can only guess at, having at that time (this being my first essay in planting) no other means of procuring them than from the public nurseryman. The trees were mostly planted in the spring of 1798: a very few had been inserted in the November preceding. I made no preparation of the ground previous to planting whatever, having but little hope of success myself, and this hope being at times reduced to despair by the unanimously unfavourable opinion of the country: after the planting was done, I scattered at the rate of six cart loads per acre of native earth over the surface; and the following spring had it hacked over with heavy hoes, and turnip-seed raked in, the produce (chiefly of the size of marbles) being in due time hacked in also, and this mode was repeated the second and third years.

4th—I have it in my power to communicate the admeasurements of size this Midsummer in addition to those I sent Mr. Galton last winter, and they are below stated. It was my intention always to have measured the trees before the spring shoot; and after its completion, before the commencement of the summer shoot; but as, for the sake of accuracy, I have always taken the admeasurement myself, so a variety of engagements have prevented my adhering to times and seasons therewith as I wished. The distances in October last did not average five feet. In my judgment the trees should have been set out at greater distances; but this plantation having become extremely ornamental, and walks having been led through it, I sacrificed a little on this point of the useful to the beautiful; from
the

the same cause I have not suffered the trees to be pruned so closely as I think right, and as I have done in other plantations: I have thinned out the plantation as it appeared to require it, but have kept no particular account of the number or value. At nine years I began, and for rails and posts of fences of single trees, many of the trees cut out were serviceable. In three years more I expect the thinning will be valuable. I should perhaps add, that the third, fourth, and fifth years after planting, where the trees, which had in general languished dreadfully, seemed to be reconciled to their situation, I drew out a considerable number of good and valuable plants for use in other plantations. The admeasurements of height have been but once taken; it is meant to continue this annually

5th—It is the pinaster which is recorded in the table.

6th—The value of the land at the time of planting may be sufficiently inferred from my answer to the third query; certainly it was not then worth five shillings per acre. The experiment on the first planted portion of the four acres having succeeded, I need scarcely say, that as soon as I felt myself justified thereby, I proceeded to plant the remainder, and it now forms, *on the whole*, as handsome and flourishing a plantation as is to be met with any where.

J. H. MOGGRIDGE.

Addition

*Addition to my former Table from admeasurements made
25th June 1810, continued in the same order, taken also
at three feet height.*

	Feet	Inch.	
Larch - - -	2	6	
Pinaster - -	2	4 $\frac{1}{4}$	
Asp - - - -	1	5 $\frac{3}{4}$	
Plane - - -	1	10	
Ash - - - -	1	6	
Asp - - - -	1	7 $\frac{1}{2}$	
Birch - - -	1	4 $\frac{1}{2}$	
Beech - - -	1	3	
Spruce - - -	1	0 $\frac{1}{2}$	
Spanish Chesnut	1	6 $\frac{3}{4}$	} There being no apparent in-
Plane - - -	1	9 $\frac{1}{2}$	
Pine - - - -	1	1	crease in the size of these
Asp - - - -	2	1	trees, I think it may be ac-
Larch - - -	1	11 $\frac{1}{2}$	counted for from the cir-
_____	1	11 $\frac{1}{2}$	cumstances of the measur-
_____	1	8 $\frac{3}{4}$	ing place having been the
_____	2	3 $\frac{1}{2}$	year before at a swell oc-
_____	1	10 $\frac{1}{2}$	casioned by branches now
_____	1	11 $\frac{3}{4}$	removed.
_____	1	11 $\frac{1}{2}$	

J. H. MOGGRIDGE.

TO C. TAYLOR, M. D. SEC.

The LESSER GOLD MEDAL of the Society was this Session voted to J. C. CURWEN, Esq. M. P. Workington-Hall, Cumberland, for his Method of feeding Milch Cows with steamed Food.

A SILVER MEDAL had been presented to him in the Year 1803, for his Experiment on feeding Cattle with steamed Potatoes, and in the Society's 21st Volume a full description, with two Copper-plate Engravings of his method of applying the Steam, are inserted.

The Apparatus therein described is in many Respects so similar to the present, that the annexed Wood Engraving will sufficiently explain any difficulty that might arise upon the subject.

Drawings from Mr. CURWEN upon a larger and regular Scale are preserved in the Society's Repository.

DEAR SIR,

YOUR esteemed favor, enquiring how I am employed, seems a hint that I am supposed to be idle, or that my ambition is become extinct; I can assure you, neither the one nor the other is the case. After the kind and liberal manner in which I have been treated by the Society of Arts, &c., I should be sorry to interfere, by competition, with those who are beginning their career; at the same time, for any matter which I conceived might be beneficial to Agriculture, there is no channel, in my opinion,

opinion, through which it could be brought before the Public, with the same chance of being favourably received, as under the auspices of a Society, which has rendered such great and important services to the empire.

In the prosecution of the system I have practised for some years, of giving cooked food to all animals, the main impediment has been the cost of labour and fuel; to lessen the one, and simplify the other, have been my constant endeavour; in this at length I conceive I have been completely successful; and that I have thereby removed those obstacles, which were opposed to its becoming generally, and I should say, universally useful. Under this conviction, I beg leave to submit to the inspection and consideration of the Society, a drawing of one of the steamers, containing 100 gallons, as now used at the Schoose farm.

Each of the two steamers which I use has three boxes, containing eleven stone each of chaff, (the husks of corn,) which in boiling gains somewhat more than two-thirds of its original weight. Wheat chaff, which alone I use, is commonly thrown upon the dunghill, as of no value but to augment the quantity of manure. It requires three hours to be sufficiently boiled. The same boiler works two sets of boxes; by the various stop-cocks the steam can be made to work either one, two, or all three boxes of each set.

The usual consumption of fuel is two pounds per stone. I estimate the quantity done every day at the Schoose to be equal to one hundred stone, or thirty-three of chaff, which takes sixty-six pounds of coal. As the expense of coal is not great here, I should not suspect much economy is practised; even at the price of coals in London this would not be above sixteen shillings per week. Two

pounds of oil cake are allowed to each stone of chaff. The milch cows and oxen are fed twice, morning and evening, having an allowance of one stone at each time. When taken from the steamer, the food is put into wooden boxes, which are mounted upon wheels to be drawn by a horse. As the chaff and liquor require to stand some time to cool before fit for use, there must be several of these boxes to put the chaff in when taken from the steaming boxes.

The cost of food for each milch cow per day.

	<i>d.</i>
Chaff, two stone, steaming, &c. . .	1
Oil cake, four pounds, . . .	4
Eight stone of turnips, 14 lb. per stone . .	4
Wheat straw,	1
	<hr/>
Total	10

The average of milk on a stock of thirty-six milch cows, was nearly thirteen wine quarts for three hundred and twenty days; one hundred and forty-two thousand quarts were sold in fifty-two weeks, ending the 20th of September last, selling price 2*d.* per wine quart. The calves brought from 2*l.* to 5*l.* each for rearing. The produce is nearly half clear profit, estimating the manure as equal to the labour. The milch cows are never suffered to be turned out. To prevent their being lame, some attention is requisite to have their hoofs properly pared, and that they stand with their fore feet on clay.

The condition, health, and milking of the cows, fed upon this plan at the Schoose, has created a considerable interest, and called forth particular attention from numerous visitors. The contrast between the condition and
milk

milk given by these cows and those fed on grains, as most if not all are in and about the metropolis, seems an object well deserving attention.

Most, if not all, the milch cows at the Schoose are in such a condition, that a few weeks feeding after they are dry, makes them fit for the shambles, with very little loss from the first cost.

Compare this with the state of a London dairy;—what may be the average loss by deaths I know not, but when done milking, their value for fattening is very little; they are so low in condition. As a substitute for chaff and oil cake, I should recommend cut hay, this steamed would make a much superior food; and I entertain no doubt, would greatly augment the milk, as well as benefit the health and condition of the cows.

It has struck me, that the sugar wash might be found of great service for boiling the hay.

As I have never seen an instance when cooked food has not produced a striking improvement in the condition of cattle, I am strongly prepossessed in its favour. My representations have had their effect with one gentleman, Mr. Isaac Franklyn, who has a dairy farm at Oxgate, on the Edgware Road, $4\frac{1}{2}$ miles from Paddington turnpike; and who lately had a dairy in Henrietta Street, Cavendish Square. An apparatus made here, is on its way for him.

In order more fully to satisfy the Society that this statement does not rest on a prejudice, natural to every projector of any plan, I beg to refer to Mr. Tubbs, who, on seeing the dairy at the Schoose this summer, was so struck with the condition of the cattle, that he promised to use his influence with Mr. Welling, to attend the meeting in September. Nor shall I rest on the respectable authority of Mr. Tubbs only; but refer also to Sir George

Paul, Bart., who will recollect, that before he saw the milch cows, I observed to him, that if the condition of the whole stock did not surpass any he had ever seen, I was ready to admit my system had failed. I need scarcely observe, that the strictest attention is necessary to see the cows always kept clean, and never to suffer the least heat to appear upon their skins, without an immediate application of black soap and water. They are also regularly carded or curried, and care taken in keeping them in a regular degree of temperature. Any considerable change affects their milking. I give cooked food from October to June, nearly eight months out of the twelve.

No branch of farming is so profitable as the dairy, when properly and well managed. By the mode I propose, I flatter myself there would not only be a great saving in expense of feeding, but also in the depreciation and loss sustained on the capital, with an augmentation in the quantity and quality of the milk ; I find that twelve wine quarts of the Schoose milk, will give from sixteen to eighteen ounces of butter, which is little inferior to what can be got at the height of the grass. Much, in my humble opinion, is to be gained both by the individual and public.

Milk in London, from its present price, must be considered as a luxury. Reduce the expense of procuring it, lower the price, and more than double the quantity might be sold, with the greatest benefit and comfort to the bulk of the community. This object is attainable, leaving a handsome and liberal profit to the cow-keeper, and I verily believe would be effected by the system I propose.

The plan I have now the honour of submitting to the Society has been adopted by Mr. Harley, of Glasgow ; by Major Ferrand, and the Reverend J. Penny, in the West Riding

Riding of Yorkshire, and many others ; and in every instance it has been found most completely to answer.

With great respect,

I have the honour to be,

Dear Sir,

Your obedient humble servant,

J. C. CURWEN.

Workington Hall, Nov. 14, 1811.

TO CHARLES TAYLOR, M. D. SEC.



MY DEAR SIR,

YOUR letter roused me into action ; I cannot suffer you to suppose I can slacken in my exertions. Though great and important improvements have been made in Agriculture in the last few years, it is far distant from perfection even in the most improved districts. The comfort and happiness of the many has always held out to me the strongest incentive for exertion, and no part of my farming operations have yielded me equal gratification as my dairy. The result of what was done at the Schoose last year has confirmed my opinion that a plentiful supply of good and unadulterated milk is of the highest importance to the comfort and health of the lower orders ; 145,000 quarts of new milk were sold in the last twelve months—Milk is now become a necessary of life—Five years ago the amount of the total sale to the town of Workington, containing between eight and nine thousand souls, might be £1,500 per annum, or at twopence per quart, wine measure, 108,000

F 4

quarts—

quarts—From the best information I can obtain, I conceive I am warranted in stating the present sale of milk to be above £. 5,000 per annum, or 600,000 quarts. Thus the proportion to each individual in the year 1806, would be 20 quarts, in the year 1811, 60 quarts. The truth is, that it was but in partial use. Now, Sir, I believe I may assume, that what was the situation of Workington a few years ago, is that of the greater part of the kingdom at present. That species of human food which is produced in the greatest abundance with the least consumption of the fruits of the earth, is a luxury, and not as it ought to be, one of the staple articles of consumption. Impressed with these sentiments, you will not wonder if I answer your enquiry respecting what I am about with no small degree of satisfaction, as it offers to me a prospect of extending a favourite object, and one that I have sincerely at heart. The time and attention I have bestowed on this subject, have given it an importance in my view, that may surprise those who have only considered it superficially. I am disposed to believe much national benefit, as well as national happiness, might be obtained by directing the attention of the farmer to this branch of Agriculture, which is but ill-understood. You will pardon me when I say, that even the dairies in and near the metropolis, are under most defective management.—Now, my dear Sir, your Society stands most deservedly high in public estimation. From long experience I know how warmly the Society is disposed to patronize every object which can tend to benefit the public.—According to the usual rate at which improvements travel, and get into general practice, it will require many years to introduce animal cookery. If I can have the good fortune to convince the Society, of the advantages resulting from giving to milch cows and other stock, a portion of warm food,

food, will they give me their sanction, and stamp the sanction of their influence upon the system? It proposes several objects. Of one I have no doubt, a great increase of milk of a much better quality. I think in many situations it must contribute to reduce the price at which it is at present sold; when a dairy is properly attended to, two-thirds of the cows now kept would give a larger quantity of milk. That instead of there being a most serious loss in the condition of the stock when their milk failed them, they would be very nearly in a state fit for the butcher. The loss of capital to the cow-keepers, is a very serious drawback from the profits of the business; and were this the only object it would be well deserving of attention.

What I should propose would be, that the Society should hold out some encouragement to induce the cow-keepers to visit the Schoose farm. If the statement I have made be found erroneous, the expenses of the persons who may be induced to undertake so long a journey, shall be at my charge. All my anxiety would be, that they should bestow the time necessary fully to comprehend the plan. If the testimony of thousands who have seen the Schoose warrants confidence, I may assume it: nor is that the only ground; it has been also tried at Glasgow; and in various parts of the West-Riding of Yorkshire, with the most complete success. The price of grain renders the stoppage of the distilleries absolutely necessary: this will deprive the cow-keepers of a considerable portion of food for their cattle. In order to prove to them what might be expected from steamed hay, I am trying four pounds of clover hay, boiled with chaff, instead of two pounds of oil-cake; I am sanguine it will answer. The milch cows drink the liquor in which it is boiled with great avidity. When hay could be afforded in greater quantities, any proportion of liquid
might

might be had; by steaming, two thirds is added to the weight. I have, in various instances, in the course of the last twelve months, sold to the butcher, at or very near prime cost, cows that were giving from three to four quarts of milk at the two meals. The cost of keep being estimated at ten-pence per day, when the quantity does not exceed five quarts there is no profit, and the getting rid of them is an object.

The amount of milk sold in the Metropolis is calculated to be £. 1,250,000 annually, or 60,000,000 of quarts, this, supposing 1,000,000 of inhabitants, allows sixty quarts to each individual, equal to what is consumed per head in the town of Workington. But it will occur to those who have any acquaintance with the metropolis, that milk is consumed only as a luxury; and is not in use with the lower classes; indeed it is in inverse ratio; and, instead of being the cheapest, is the dearest food. Supposing the produce of a milch cow, fed with grains, &c. to be ten quarts per day, for 320 days, or 3,200 quarts, it would require 18,750 cows, to give the quantity of milk sold; a pretty strong proof of the adulteration which takes place, as I do not suppose there is near that number kept.

The cost of feeding on steamed hay, I should suppose to be nearly as follows:

		s.	d.
One and a half stone of hay, at 6 <i>l.</i> per ton	-	1	0
One stone dry do. 14 lb. to the stone	- -	0	8
Steaming, labour, &c.	- - - - -	0	4
		<hr/>	
		2	0

If I recollect right, 2*s.* 6*d.* per day, was Mr. Welling's estimate

estimate of the cost of feeding milch cows some years ago.

From what experience I have had at the Schoose I estimate the produce of each milch cow at twelve quarts per day; this would add 12,000,000 of quarts, on the number of cows supposed to be kept,—say,

	£.
12,000,000 of quarts at 4 <i>d.</i> - - -	200,000
Suppose only a saving of £. 2 per head, in the number of cows, from superior health and con- dition - - - - -	36,000
	<hr/> 236,000

I believe I should be warranted in stating the actual loss of the dairy men, at £. 5 per head on his stock, in the neighbourhood of London, by their present mode of management.

Suppose my estimate correct of 18,750 milch cows, valuing them at £. 28, one with another, would amount to £. 337,500.

If I have succeeded in my endeavours to impress upon the Society the magnitude and importance of the object, I shall feel I have done some service.

I have the honor to be, with great respect,

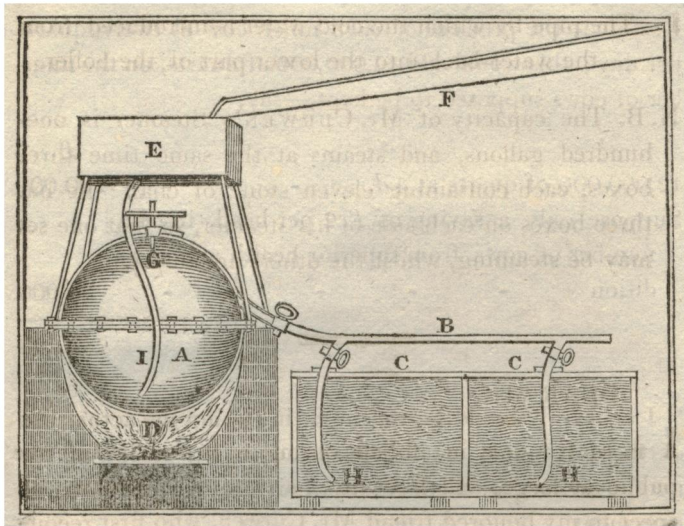
Dear Sir,

Your obedient and humble Servant,

J. C. CURWEN.

Workington-Hall, Nov. 15th, 1811.

TO C. TAYLOR, M. D. SEC.

MR. CURWEN'S *Apparatus for Steaming Food for Cattle.**Reference to the Wood Engraving.*

- A** Represents a section of the iron steam vessel in which the water is to be boiled.
- B** The main steam pipe to convey the steam from the boiler to the strong square wooden boxes C C, containing the chaff or hay to be steamed, at the bottom of which a small quantity of water is previously placed.
- D** The fire-place and ash-hole under the steam vessel.
- E** The water-back which supplies the boiler with water, by means of the spout F, from a pump communicating therewith.
- G** The safety valve of the steam vessel.
- H H** The lead pipes which convey the steam from the
main

main steam pipe, to nearly the bottom of the wooden boxes containing the chaff or hay; these pipes have cocks above.

I. The pipe by which the cold water is introduced from the water-back into the lower part of the boiler.

N.B. The capacity of Mr. CURWEN's Steamer is one-hundred gallons, and steams at the same time three boxes, each containing eleven stone of chaff: he has three boxes on each side of his steamer, so that one set may be steaming, whilst the others are emptying.



DEAR SIR,

I FEEL it a duty incumbent on me, as it may benefit the public at large, and likewise as a tribute of grateful respect to my honored friend Mr. Curwen, who first recommended to me the use of steamed food for my cattle, to inform you, that I have made a long and decisive trial thereof, and have found it to answer, both in respect to the carcase and milk of my cows. They daily increase in quantity, and the quality of the milk is far superior to any I ever saw.

I give steamed food once a day to my horses, namely, in the evening when they have done work, and I find it to answer much better than dry food.

I was accustomed to feed my cows with grains, hay, and green food, but since I have given them the boiled hay, they have not had any grains nor green meat, and I find the cost of their keep to be less than when I fed them with grains. In short I feel myself so well convinced of the advantages resulting from the use of warm food,

food, that I do not intend ever again to have recourse to grains.

The liquor or decoction from the hay, which is taken from the bottom of the steam boxes, is greedily drank by the cows before they begin to eat the hay.

I am,

Dear Sir,

Your most obedient servant,

ISAAC FRANKLYN.

*Oxgate Farm, Edgware Road,
Wellsdon, Middlesex, March 16, 1812.*

TO C. TAYLOR, M.D. SEC.

Estimates of the difference in Expense of Feeding Twenty-eight Milch Cows on Grains, &c. and on Steamed Food, each Method tried for one Week.

Feeding with Grains, &c.

	£.	s.	d.
Thirty quarters of grains of eight bushels each,			
at 4s. - - - -	6	0	0
Cartage, &c. - - - -	2	10	0
Seventy trusses of rowen, or second crop of			
hay at 2s. 3d., each truss weighing 4 stones			
or 56 lbs. - - -	7	15	6
	<hr/>		
	£.	16	5 6

The above is, within a fraction, 1s. 8d. per cow, per day.
Feeding

Feeding with Steamed Hay and Rowen.

	£.	s.	d.
Hay steamed, forty-two trusses, at 3s. 1d.	6	9	6
Mens' wages, chaff, cutting and steaming	0	15	0
Expenses of fire - - -	0	7	0
Seventy trusses of rowen, at 2s. 3d.	7	15	6
	<hr/>		
	£.	15	7 0

This is, within a fraction, 1s. 6½d. per cow, per day.

The balance, in favor of the steamed hay, is 18s. 6d. per week, besides the better condition and value of the carcasses of my cattle, the great increase of milk, and superiority of its quality. I deduct three-pence per truss from the present average price of the hay used in steaming, on account of the cartage and market expenses which are saved by its being consumed at home. I put 1/. per day for fire, though I do not believe it costs me any thing, as the water from the steam boiler serves to clean the milk utensils, for which the firing used to cost me as much; besides which, I apply the steam to many culinary purposes, having a pipe communicating from my steamer to my kitchen.

ISAAC FRANKLYN.

DEAR

DEAR SIR,

WHILE I acknowledge with pride and gratitude, the honour conferred on me by the Society, it will be some satisfaction to them to know, that I have had various applications from different parts of the kingdom, for further details as to the plan for which I have been honoured with the Society's Gold Medal. I hear with peculiar pleasure that a number of the steamers have been ordered, and that the patronage of the Society is likely to give great extension to my system. I am gratified at all times to afford any information in my power; but I do not wish any one to rest on my statement, and I have uniformly thus declared, 'Visit the Schoose, judge with your own eyes, and if not satisfied I will repay you the expense of your journey.' Mr. Franklyn I hear is succeeding most admirably, I think he is entitled to great praise, and I shall be proud to bestow upon him, at my first meeting, a premium cup, for his having so promptly seconded an object I have so much at heart.

I am,

Dear Sir,

Your humble servant,

J. C. CURWEN.

Belle Isle, Windermere,

July 3, 1812.

TO C. TAYLOR, M. D. SEC.

The

The SILVER MEDAL of the Society was this Session voted to C. T. SKURRAY, Esq. of Alverdiscot, near Barnstaple, for his culture of Summer Wheat, or Blé Tremois. The following Communications on the Subject were received from him, and Samples of the Wheat are in the possession of the Society.

SIR,

AT the present high price and scarcity of bread corn throughout the kingdom, any attempt, however unsuccessful, to remedy these evils, will, no doubt, be considered of national importance; impressed with this idea, I beg leave to present to your Society, which professes the Encouragement of Agricultural Improvements, a specimen of the real Summer Wheat, (*Triticum Æstivum*) or Blé Tremois of the French, which I have grown with great success, for some years, at my farm in Devonshire. In a season like the last, had it been generally known and cultivated, we should now have but little cause to dread a famine, or depend on our enemies for the bread we eat. As the merits of this grain have been clearly ascertained and pointed out by that eminent botanist, Sir Joseph Banks, and many others, any thing which I can say in its favour, is therefore unnecessary; but as few practical farmers have leisure to read the voluminous writings on this subject, I will, if your Society should think it worthy of their notice, send you a brief account of my method of cultivating it.

For some years it has produced me *double per acre* the quantity of the common wheat; and this last season I fortunately sowed twenty acres, which were very productive, and a good sample, although forty acres of my Winter

G

Wheat,

Wheat, nearly adjoining, were so blighted, or mildewed, as hardly to pay the wages of harvesting and thrashing. Two acres of my Summer Wheat produced sixty-one bushels, which would have sold at 16s. per bushel, for bread; but having a demand for it for seed, it produced 20s., or 61*l.*, besides the value of the straw. The common wheat, growing in the same field, was much blighted, and produced, from two acres, only eleven bushels, which sold at market for 9s., or 4*l.* 9s.: and, in fact, all the common wheat in my neighbourhood is so bad in quality, and deficient in produce, as not to pay the expenses of growing it.

As I have no other object in view but to make known the merits of this valuable grain, I shall send you a small quantity as a specimen, which you will observe is in its *rough state*, as it was thrashed from the straw: of course, if skreened, the sample would be superior; and should your laudable Society express a wish that I should communicate to you the method I have adopted in growing it on my farm, if you will favour me with a letter to that effect, I shall have much satisfaction in forwarding such a communication as soon as possible. It is proper to observe, that there are many varieties of what are called Spring Wheat, some of which are grown extensively in the North of Europe; but the variety I cultivate came originally from Jersey; it is a bearded wheat, and superior to any of the Spring Wheat hitherto known.

I have the honour to be,

Sir,

Your most obedient humble servant,

CHARLES THOMAS SKURRAY.

Secretary to the North Devon Agricultural Society.

Alverdiscot, near Barnstaple,

March 24, 1812.

TO C. TAYLOR, M. D. SEC.

SIR,

SIR,

I SEND herewith, a specimen of my Summer Wheat, in its rough unskreened state, and beg to observe, that it grew on a field of about eight acres; six acres of which were sown with common wheat, at Michaelmas, 1810; and the other two acres were sown the 20th April, 1811, with the Summer Wheat, the six acres were so much injured by the blight or mildew, as to be hardly worth the expense of harvesting; whilst the Summer Wheat was perfectly free from mildew or blight, and produced upwards of thirty bushels per acre. I have cultivated it for some years, and feel convinced, that if this variety of Summer Wheat was universally known among our practical farmers, the country might be rendered independent of foreign nations for a supply of bread corn, the importance of which is evident. I shall with much pleasure present your Society with a brief account of my mode of cultivating it, if they deem it worthy of notice; and I shall feel the highest satisfaction if my humble endeavours to introduce its cultivation to general practice should prove successful.

I have the honour to be,

Sir,

Your most obedient humble servant,

CHARLES THOMAS SKURRAY.

Alverdiscot, near Barnstaple,

March 29, 1812.

To C. TAYLOR, M. D. SEC.

SIR,

I BEG leave to state briefly, some important considerations in favor of Summer Wheat. Viz.

1st. It may be sown with success so late as the 1st of May.

2dly. It requires no extra culture beyond other spring corn.

3dly. It is a better nurse to clovers, and grasses, than barley or oats.

4thly. It contains more nourishment than common wheat.

5thly. It yields (in soils unfit for winter wheat) a large increase.

6thly. The straw is excellent fodder for cattle, and superior to barley straw.

The above facts can be testified by many gentlemen and practical farmers in the north of Devon; but there are other material points to which I beg leave to call the attention of your Society.

The great sums paid to foreign nations for a supply of bread corn, to support our population, might, by the cultivation of Spring Wheat, instead of barley, be wholly saved to the country; the use of sugar in our distilleries might then be permitted, without detriment to the agricultural interests of Great-Britain; and those sacrifices which our landed proprietors are called upon to make for the support of our West India colonies, would be unnecessary.

Mr. Coke, of Holkham, when he addressed the House of Commons on the Distillery Bill which passed recently,

very

very justly observed, that the soil, and other circumstances, in various parts of the kingdom, were unfavourable to the culture of oats; and that the farmers were *obliged to grow barley* after turnips, which formed a great link in the Norfolk rotation. As Summer Wheat is known to succeed admirably after turnips, why should it not be cultivated in preference? There can be, in my opinion, no other cause, than is occasioned by the difficulty of procuring the genuine seed of the true Summer Wheat; for although there are upwards of forty varieties of this species, some are so inferior as to give little profit to the growers, which has unjustly got the whole species into disrepute with them. I beg to be understood, that I do not by any means advise the culture of summer wheat in situations which are favorable to the winter wheat, unless by accident the young wheat should be destroyed, in which case I strongly recommend it as a certain means to avoid a dearth of bread corn, nor do I intrude it on your notice as a new discovery, it having been known on the Continent of Europe for centuries; but however unaccountable it may appear, it is a grain that is but little known in most parts of this kingdom, among our practical farmers, on whom the country depend for subsistence. I do not hesitate to say, that if this grain had been generally cultivated last spring, bread corn would, at this moment, have been plentiful and cheap, the reverse of which is now well known. This grain is not subject to any distempers, nor does the blight affect it like common wheat; which alone, independent of every other consideration, is a sufficient inducement for me to recommend it. Its merits are well understood by the farmers in my neighbourhood, who have very wisely reserved their whole

crop for seed, by which means a plentiful supply may be obtained another season. Owing to its present scarcity, the farmers are buying it at Barnstaple market, at one guinea per bushel.

I shall begin sowing fifty acres of it next week, and have no other object in pointing out its merits, but to see it brought into general cultivation, a matter (in my humble opinion) of great national importance.

I have the honour to be,

Sir,

Your most obedient humble servant,

CHARLES THOMAS SKURRAY.

Alverdiscot, near Barnstaple,

April 3, 1812.

To C. TAYLOR, M. D. SEC.

DEAR SIR,

ALL the information I am possessed of respecting Spring Wheat, has been acquired by my own experience, and that of the principal farmers around me, with whom, from its peculiar merits, it has become an ordinary crop of late years. I have found it thrive on various soils, but a loam, inclining to stiffness, certainly suits it best; a light soil, however, if after turnips eaten off by sheep, will produce a good crop; and in this neighbourhood it is usually

usually sown broadcast from the beginning of April to the first week in May. The common practice here is to sow it after a green crop, and if the land is in heart, it requires no manure; it ripens with us about the same time as the common winter wheat; is not subject to the mildew, or rust; and, as the straw is slender, I always mow it with a scythe; by which means it is speedily harvested, and at a trifling expense. The usual crop of *common wheat* in this part of the country, is, on an average, fifteen bushels per acre; but the same fields which produce fifteen bushels of winter wheat, generally yield twenty-five bushels of Summer Wheat; and, in some cases, much more. The farm I occupy consists of nearly four hundred acres, of various descriptions of soil; on which, for three years past, owing to bad seasons, my common wheat has not averaged twelve bushels per acre, of a very inferior sample; whilst the summer wheat produced about twenty bushels per acre, of a good quality; and, in *one instance*, it yielded above thirty bushels per acre. The weight, in 1810, of a Winchester bushel, was rather more than 60 lbs; but last year, not above 58 lbs. It sells in our markets for the same price as good red lammas wheat, and is eagerly bought by our millers.

Last year my crop of wheat consisted of forty-five acres of winter, and twenty of Summer Wheat; the winter corn was blighted so much as to be almost unfit for use, and the produce only six bushels per acre; the Summer Wheat, though growing partly in the same field with the other, was wholly free from blight, and yielded, from one acre, which was thrashed separately, thirty-one bushels, of the same quality as that which I had the honor of presenting, as a specimen, to your Society.

The grass seeds, sown with it, thrive admirably, as it is less likely to lodge in bad weather than other spring corn.

I have the honour to be,

Sir,

Your most obedient humble servant,

CHARLES THOMAS SKURRAY.

Alverdiscot, near Barnstaple,

April 17, 1812.

TO C. TAYLOR, M. D. SEC.

IN 1809, I made the following experiment with the Summer Wheat.

About the 4th of May I sowed part of a field of nine acres with barley, and the other part with Summer Wheat, the land was poor, and not well worked.

	£.	s.	d.
The barley produced seventeen bushels per acre,			
which I sold for 4s. 9d. per bushel, and it			
produced me, per acre	-	-	4 0 9
The summer wheat yielded twenty-one bushels,			
of a good sample, and sold for 14s. per bushel,			
or per acre	-	-	14 14 0
Superiority in favor of the Summer Wheat, per			
acre	-	-	£. 10 13 3

In 1811, I sowed a field with barley the beginning of May, except one acre, which being wet ground and poor,
was

was sown with Summer Wheat, for experiment; the barley produced not quite twenty bushels per acre, which sold, in December last, for 6*s.* 6*d.* per bushel; and the acre of Summer Wheat produced thirty bushels and two pecks, which sold for 20*s.* per bushel, a few weeks ago.

		£.	s.	d.
Produce of the barley, per acre, say	-	6	10	0
Do. of the summer wheat	- -	30	10	0
Balance in favor of the wheat, per acre		£. 24	0	0

The same year, in a field of eight acres, seven acres were in common wheat, and about the end of April I sowed the other acre with the Summer Wheat, the winter wheat was struck with rust, so as to be hardly worth harvesting, but the Summer Wheat produced thirty bushels, from the one acre, the sample similar to that your Society did me the honor to accept.

CERTIFICATES.

No. I.

THIS is to certify, that I have grown the Summer Wheat for three years with great success, and intend to cultivate it on a much larger scale this season, in consequence of having a more productive crop than the original produce of this county. I also sold it one day this season publicly in the market, to a miller, for 2*s.* per bushel *more* than the *common white wheat*; it weighed 60½ lbs. per bushel; it produced me twenty-eight Winchester's per acre;

acre; the common productions of this country wheat yielded nineteen bushels, grown in the same field the last season, and weighed the same.

W. TYETH.

Pill Head, April 21, 1812.

DEAR SIR,

THE above is the certificate of William Tyeth, Esq. of Pill Head House, near Biddeford, a gentleman who possesses a very correct judgment on every subject connected with agriculture, and who farms a considerable estate of his own in the most improved manner.

I am,

Dear Sir,

Yours, &c.

C. T. SKURRAY.

TO C. TAYLOR, M. D. SEC.

No. II.

THIS is to certify, that I have cultivated the Summer Wheat for four years, and find the produce superior to the other wheats; I have sown it throughout the month of April, in general after turnips and potatoes; and it is ripe about ten days or a fortnight after the wheat that is sown
at

at Michaelmas. The baker that I have dealt with for upwards of twenty years, has preferred it to the common red wheat; the weight per bushel is about 60 lbs.; I clover the ground at the same time as with other spring crops, which I find to answer extremely well.

LEO. WOOD.

South-Cott, April 22, 1812.

No. III.

THIS is to certify, that I have cultivated the Summer Wheat, and have found it to answer extremely well, particularly this last season, and think it a valuable wheat. I am convinced that I had more bushels per acre of that wheat this season, than I should have had of any other wheat in the same ground. It was totally free from rust, and all my other wheat was *much* rusted, particularly in the adjoining field.

JOHN DENE.

Horwood, April 22, 1812.

SIR,

THE first of these two certificates is from an opulent farmer near Biddeford, Mr. Wood, of South-Cott.

The latter from a respectable clergyman, who is proprietor of a good estate, part of which he farms himself, the Reverend John Dene, Rector of Horwood, in this neighbourhood.

C. T. SKURRAY.

To C. TAYLOR, M. D. SEC.

The

The SILVER MEDAL, or TWENTY GUINEAS, at his option, the Premium offered, Class 26, were this Session adjudged to JOHN FINCH, Esq. of Red Heath, near Watford, Herts; for Rearing and having in his present possession, One Hundred and Twenty Three Stocks of Bees. In a handsome manner he preferred the Honorary Reward. The following Communication was received from him.

SIR,

ON perusing the list of Premiums offered by the Society, I found in article 26, a premium proposed for the greatest number of hives stocked with bees. Having a great number in my possession, I am induced to become a candidate for the premium. I beg leave to inform you, that from a single hive I have with much care and attention increased the number to one hundred and twenty-three, in my possession the last summer.

I have inclosed Certificates to confirm this statement.

I remain,

Sir,

Your obedient servant,

JOHN FINCH.

Red Heath, near Watford, Herts.

Feb. 29, 1812.

TO C. TAYLOR, M. D. SEC.

CERTIFICATES

CERTIFICATES were received from R. H. Solly, Esq. Great Ormond Street, and Mr. John Finch, jun., testifying that on the 18th day of August, 1811; there were one hundred and twenty-three hives stocked with bees, in the garden of Mr. John Finch, of Red Heath.

SIR,

IN answer to your letter, acquainting me that the Society had adjudged to me their Silver Medal, or Twenty Guineas, at my option, I beg leave to observe, that I prefer the Medal of the Society, as a more honorable and permanent mark of the Society's approbation.

I am sorry to say that I cannot give so precise an account of the produce of my bees as I could wish, having taken no regular account thereof, but, to the best of my knowledge, the weight of the last year's honey was 150lb., and the wax 20lb., but as many of them were late casts, their produce of course must be small.

It is impossible to state the average quantity produced yearly, as it entirely depends on the swarm.

I have the sole management of my bees, and my constant attention is requisite during the swarming season, as wherever the Queen Bee goes, the rest of the swarm are sure to follow.

My method of treating the swarm is, to take off the bough on which they may happen to settle, and shake them off into a hive prepared for them.

It is particularly requisite to keep them covered up during the winter, and likewise to secure them from vermin

vermin and birds, such as Tom-tits and Mice, which often make great havock amongst them.

Having great convenience in my garden, I have been induced to try different ways of placing them out; and certainly find them to succeed much better when rather shaded by shrubs, than when placed close together and fully exposed to the sun; as the strong hives are very apt to rob those which are weak.

I remain,

Sir,

Your's most respectfully,

JOHN FINCH.

Red Heath, near Watford,

May 18, 1812.

To C. TAYLOR, M. D. SEC.

SIR,

IN reply to your further inquiries,—My first keeping of bees originated from finding a swarm in my orchard, from which I have raised my whole stock. My situation is woody, between two parks, where are a great number of lime trees, from which the bees at one season of the year collect a great deal of honey. The mountain sage, which is very abundant, affords a great supply, as also the buck wheat blossom, a great many acres of which are sown in the neighbourhood.

My present stock amounts to nearly 200 hives, and I do not perceive they find any difficulty in getting food. The profit attending them I cannot with any certainty ascertain,

ascertain, from my sometimes selling the honey, and sometimes making mead thereof. I should judge a good hive to weigh from 40 to 50lb.

I am,

Sir,

Your obedient servant,

JOHN FINCH.

Red Heath, August 23, 1812.

TO C. TAYLOR, M. D. SEC.

TEN GUINEAS were this Session voted to Mr. ARTHUR HODGE, *Bride Lane, Fleet Street, for his Invention of a Pot for Preserving Butter from becoming rancid in Warm Weather or Hot Climates. The following Communications were received from him; an Explanatory Engraving is annexed, and a Drawing of the Vessel is preserved in the Society's Repository.*

GENTLEMEN,

IT is now about six years since my arrival from the West Indies, without knowing that you countenanced and held forth encouragement *for all things of useful invention*, for I had supposed that you gave premiums only *for particular objects*; until on application to a friend, I was informed
of

of my error. Therefore I now beg leave to lay before you, a butter pot, for obtaining any reward which you may think it deserves.

I am,

with great respect,

Gentlemen,

Your obedient servant,

ARTHUR HODGE.

Twelve Bells, Bride Lane,

Dec. 16, 1811.

TO C. TAYLOR, M. D. SEC.

*Reference to the Engraving of Mr. ARTHUR HODGES's
Vessel for preserving Butter from becoming rancid. Plate
1, Fig. 1.*

THIS figure represents a section of the pot, which consists of three parts ; first, a pot or vessel A, in which the butter is contained ; this stands in the dish B ; and on the top of the vessel A, is another pot C, which contains water, this latter vessel is made of that porous kind of earthenware which will permit water to pass through it.

The water therefore contained in the upper vessel C, continually percolates through the sides *a a* thereof, and trickling down the sides *b b* of the pot A, constantly evaporates, and thus produces a degree of cold which is well adapted for keeping the butter fresh, or from becoming rancid in hot weather.

Ten GUINEAS were this Session voted to Mr. JAMES OGDEN, of Dukinfield, in Cheshire, for his improved Instrument for Pruning young Trees. The following Communications were received upon the subject; an Explanatory Engraving is annexed, and the Instrument is preserved in the Society's Repository.

SIR,

THE anxious desire I entertain for the advancement of the propagation and care of timber, will, I trust, prove a sufficient excuse for thus addressing you.

To make any observations to you upon the propriety, (nay the duty demanded by the country from those in whose power it lies) or the profit resulting from planting, would be superfluous, and merely an intrusion upon your time, but upon one process intimately connected with planting, and of the advantages and disadvantages of which there are many opinions, you, I hope, will suffer me to make a few remarks.

It is obvious to all who have attended to the growth of young trees, that upon their first venturing from the soil, one head or leading shoot is only produced; it is equally obvious, that in the course of their growth, that that shoot, from a multiplicity of causes, may be destroyed, perhaps by frost, winds, cattle, &c. and that its place is usurped by many competitors for superiority; should one or these fairly attain pre-eminence, it may be considered the leader; but if they all equally flourish, which in sycamore, ash, and many other plants, is frequently the case, the

H

tree

tree grows up a spreading, park-like tree, beautiful indeed to the painter, but to the timber-merchant not desirable.

Upon this I form my opinion, that the great *Art of Pruning*, is the suffering only one leader, or, in fact, in making your tree a perfect monarchy, the inferior branches not contending with their leader, but supplying that leader with strength to establish its vigor, and to raise the tree to an elevated rank in the forest.

Experience must instruct the woodman, what trees bear their side branches taken off, and in what cases that operation may be necessary, but all pruning is perhaps better completed ere the tree has attained its tenth year. By that time the leader has got fairly established, and the side branches so interrupted by the neighbouring trees, as not to have it in their power to become too luxuriant. After this long, and what I fear may be deemed tedious preface, I come to the purport of my letter, which is to notify to you the invention of a *Machine for Pruning*, by a person in my service. Taking myself great pleasure in attending to my own planting and plantations, I have frequently found the men at a loss how to take off one of the two or more contending leaders, from a plant perhaps 12 or 15 feet high; the plant has been too slender to bear a ladder, or a boy to climb it, too strong to be pulled down without danger of injury; in this case a mallet and chissel have generally been resorted to—a very laborious and uncertain method. The instrument now presented to your notice, fixed upon a pole of whatever height may be necessary, is suspended upon that bough which is to be cut off, by the hook; that side of the hook, contrary to which the knife acts, to be pressed close to the bole of the tree, the string which is attached to the lever then pulled, and with very little exertion the branch is amputated, and leaves a
wound

wound inflicted with such a degree of smoothness, as to cause no fear whatever of its not healing. The principle of this instrument is such, as to be capable of having its powers greatly extended, but in young plantations (and in those it was intended solely to be used,) it will generally be found to be of sufficient strength. Upon the invention of it, being myself a member of the Manchester Agricultural Society, I presented it to that body, merely wishing their opinion; that opinion, I am proud to say, was highly favourable, inasmuch as to consider the inventor deserving of one of their premiums; and since that time many of the members have patronized it by their adoption. Not wishing a patent to be obtained, which might prevent the general use of the instrument, and which, to a man with a large family, might be of too great risk to speculate in, it was suggested that the reward to the inventor might accrue from the kindness of those who, approving the instrument, chose to possess it from the hands of the inventor himself, at the price of one guinea. Should the *Dukinfield Pruner* be honoured with the approbation of any of the members of your society, I shall be gratified in ordering James Ogden, the inventor, to attend to your commands.

I have the honour to be,

Sir,

With respect,

Your most obedient servant,

FRANCIS DUKINFIELD ASTLEY.

Dukinfield Lodge, Cheshire,

October 24, 1811.

To C. TAYLOR, M.D. SEC.

SIR,

I SENT this morning to the Society of Arts, &c. the Pruning Machine, invented by Mr. James Ogden, which I had the pleasure to exhibit to you last week, and which is now mounted for use. I beg leave to state, that I have seen it employed, for the purpose of experiment, and that it appeared to me at once simple and powerful, and excellently adapted to the purpose for which it is intended.

I have the honor to remain,

Sir,

Your obedient servant,

LOUIS HAYES PETT.

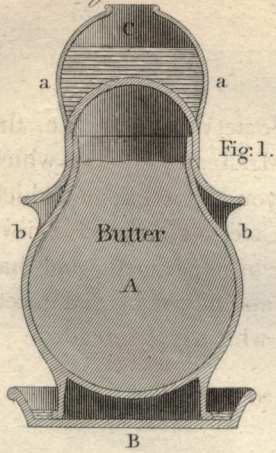
*No. 9, New-Square, Lincoln's-Inn,
April 28, 1812.*

TO C. TAYLOR, M. D. SEC.

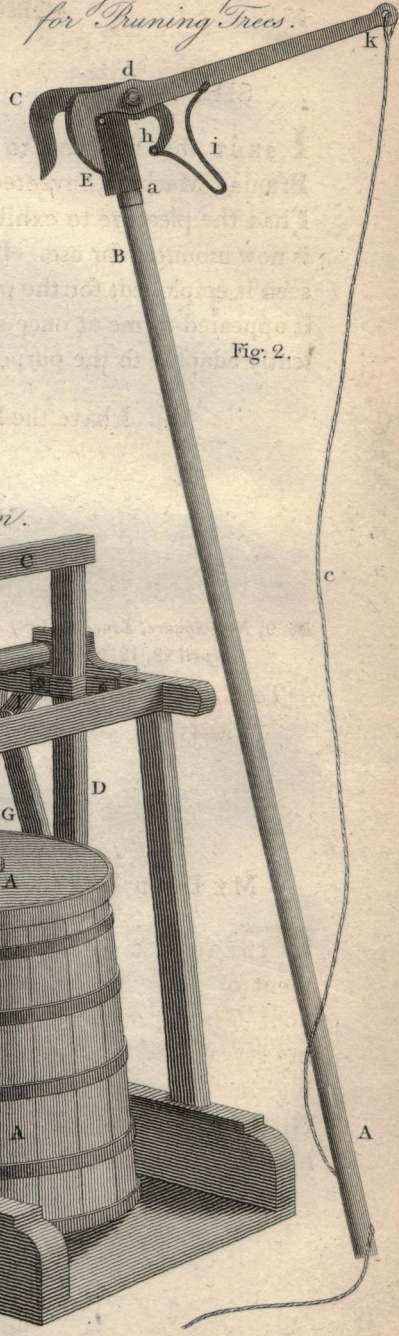
MY LORD DUKE,

UNDERSTANDING that the Society for the Encouragement of Arts, Manufactures and Commerce, over which your Grace presides, have complimented James Ogden, my servant, with a premium for his invention of a pruning instrument, I beg leave to recommend it to your Grace's patronage, as a very useful invention. I should not have taken this liberty with your Grace, if I did not think,

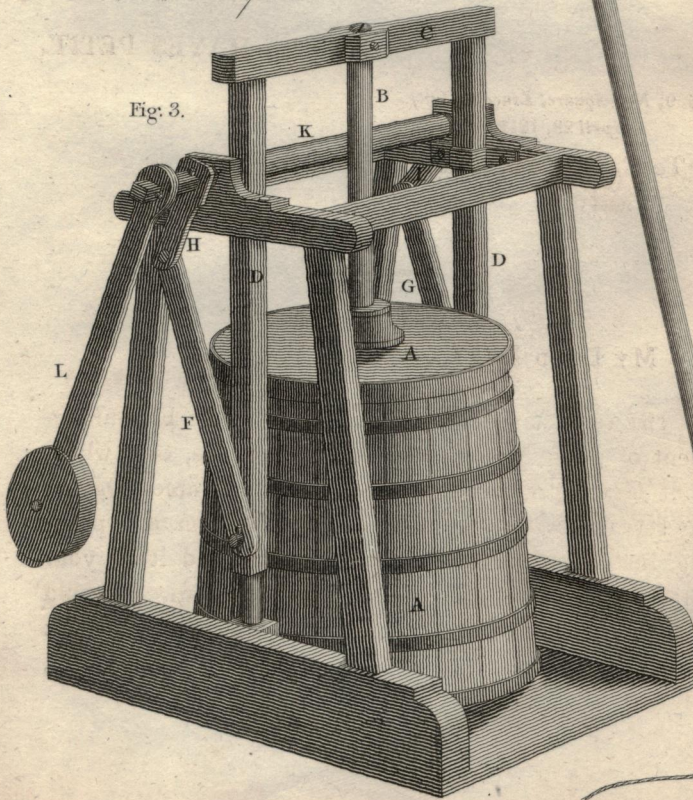
*Mr. Hodges's Pot for
preserving Butter.*



*Mr. Ogden's Implement
for Pruning Trees.*



Mr. Wm. Sampson's Churn.



think, that the encouragement shown to a livery-servant might be an excitement to others in similar situations, to make a far different use of the great leisure they possess, than what they frequently do.

I may perhaps be allowed, before I conclude, to say, that I have, this last season, used the instrument in pruning my own plantation, in Cheshire, and that I am persuaded it has saved me an expense of, at least, twenty pounds in mens' wages.

I have the honor to be,

My Lord Duke,

Your Grace's most obedient, and

very humble servant,

FRANCIS DUKINFELD ASTLEY.

Dukinfield Lodge, May 23, 1812.

HIS GRACE THE DUKE OF NORFOLK,
PRESIDENT.

Reference to the Engraving of Mr. JAMES OGDEN's Instrument for Pruning young Trees. Plate 1, Fig. 2.

THIS instrument consists of a long pole AB, on the top of which a pair of shears, of a peculiar construction, is fixed, they consist of a hooked blade C, having a flat shank, which is fixed, by its tang, into the top of the

H 3

pole,

pole, which end of the pole has a ferrol upon it also ; to this the moving blade E, and its handle or lever dk , is united, by the centre pin d , the tail, or end k , of this lever, has an eye, to receive a rope C, which comes down within reach of the person who holds the pole A B ; and it is plain, that by pulling this, the blades shut, and will readily divide any small branch which is introduced between their edges. The particular excellence of these shears, consists in the hooked form of the fixed blade C, and in the peculiar curvature of the moving blade E, which is such, that it cuts with a drawing motion, and will therefore divide a branch more completely and clearly, than by shears of a common construction. h , is an arm proceeding from the shank a , at the end of which is jointed a V spring i , the other end of which is lodged in a gap in the lever dk , and constantly presses the tail k upwards, thus tending to separate the blades, and open the shears ; near h , a pin or stud is fixed upon the flat shank, which stops the blade E from opening too wide by the action of the spring i ; and it is prevented from being pulled too far downwards by resting upon the closed spring.

The SILVER MEDAL and TEN GUINEAS were this Session voted to Mr. WILLIAM SAMPSON, No. 20, Great Wild-street, for his Invention of a Churn, by which Butter may be easily and quickly made. The following Communication was received from him, an Explanatory Engraving is annexed, and the Churn preserved in the Society's Repository.

SIR,

I HAVE left a small churn, of my invention, for the inspection of the Society, it hath actually been employed in making butter, and answered well for that purpose; it works with ease, and the mechanical power will be found to be applied to the best advantage.

I am,

Sir,

Your humble servant,

WILLIAM SAMPSON.

20, Great Wild-street, Lincolns-Inn-Fields,
Oct. 23, 1811.

TO C. TAYLOR, M. D. SEC.

*Reference to the Engraving of Mr. WILLIAM SAMPSON'S
Churn. Plate 1, Fig. 3.*

A A, is a common barrel churn, the churn-staff B of which is pumped or worked up and down by the following mechanism: the staff is fastened to the cross-bar C, and from this two upright rods, D D, descend to the lowest part of the machine, being guided by passing through staples fixed in the frame; at the lower end of them, two rods, F G, are jointed, the upper ends of these rods are connected with cranks, or levers, H I, which are fixed upon a horizontal axis K, and this also carries a long pendulum or lever, L, which governs the motion; this being swung backwards and forwards by hand, alternately elevates and depresses the churn-staff B, and two beaters within the churn which are fixed upon it.

*The LESSER SILVER MEDAL of the Society was
this Session voted to Mr. MILES BRAITHWAITE,
of Kendal, in Westmoreland, for his Planta-
tion of Sixty Thousand Timber Trees, near
Hawkshead, in Lancashire. The following
Communications were received from him,*

SIR,

IMPRESSED with a due sense of the valuable services
which the Society of Arts, &c. render to the world, I
beg

beg leave, through your medium, to offer myself to their notice. Neither fortune nor particular circumstances can entitle me to a reward under any of the articles mentioned in the Society's list of Premiums, but relying on the well known liberality which has always distinguished the Society, I trust that I shall not apply in vain, resting on their professions of rewarding improvements, though not particularized in their list of Premiums offered.

Coming into possession of a small estate early in life, in which there was a quantity of rocky sheep pasture, of little value in its natural state, situated amongst the lakes, and similar to that for which the Society rewarded the plantations made by the Bishop of Llandaff, J. C. Curwen, Esq. and Doctor Ainslie, I was induced to follow their example as far as I was able.

When the Society considers the large fortunes those gentlemen possess, in comparison with mine, at the time I commenced my plantations, and that at the time I planted upwards of sixty thousand trees for timber my income was very small, I hope my humble endeavours will be entitled to their attention, and that my exertions will be found equal, if not superior, to those whose fortunes are so infinitely beyond mine, and will afford a lesson to some of the younger sons and daughters of persons who are rich, but who cannot leave all their children great fortunes.

My largest plantation was made in the winter of 1807 and 1808, and was upheld by the person I contracted with for three years. Providence favoured my endeavours, the first winter being so wet that scarcely a tree died.

The trees planted are suitable in species to the situations, and planted in such a bleak spot, that it could not have been applied to a better use.

The

The plantation which I call the Intack, is situated on a steep declivity facing the north and west, and of course exposed to the most tempestuous winds of this part of the country. I have attempted to guard against them by forming a deep belt of Scotch firs in front, and also planting them on the highest parts of the ground. The others are various sorts of timber trees. I should have been glad to have mixed more oaks with them, but the poverty of the soil, and bleak situation, would not admit of it. Indeed I had great prejudices of the country people to overcome in making my plantations, but I am certain, that when the trees are cut down, at a distant period, that the land underneath them will be found much improved, from the annual decay of the herbage and fall of the leaves. The plantation is well-fenced from the depredations of cattle. The ground was prepared for planting, by burning off the ling, the soil was loosened by the spade and pick-axe, and the trees carefully and firmly planted in a quincunx form, at four feet distance each way; the quantity of land is about twenty-two and a half acres, but interspersed with rocks. Inclosed, you have certificates from C. Watson, the planter; R. Brockbank, an industrious house-carpenter; and John Satterthwaite, a respectable farmer.

I am, Sir,

Your's very respectfully,

MILES BRAITHWAITE.

Kendal, Nov. 30, 1811.

TO C. TAYLOR, M.D. SEC.

A CERTIFICATE

A CERTIFICATE was received from CHARLES WATSON, ROBERT BROCKBANK, and JOHN SATTERTHWAITE, dated Hawkshead, Nov. 25, 1811, stating, that they had inspected Mr. Braithwaite's plantation, and it was their united opinion, that they had never seen a more thriving plantation, when the soil and situation is considered. That there are larch trees which measure nine feet and upwards, and Scotch firs five feet nine inches; and that the number of sorts are as follow, in the Intack plantation: viz.

Larch	-	-	-	45,600
Scotch	-	-	-	7,200
Ash	-	-	-	500
Oaks	-	-	-	500
Beech	-	-	-	3

Besides 1,200 larches in Foulgate plantation, independent of other trees planted in Strickland, of which they make no report.

*Reference to the ENGRAVINGS, and Directions to
the BOOKBINDER.*

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- Place the Portrait of the late Earl of Romney, as Frontispiece to the Volume, to face the Title page.
- The Plate, No. 1, of Mr. Hodge's Pot for preserving Butter, of Mr. Ogden's Implement for pruning Trees, and Mr. Sampson's Churn, to face page 92.
- The folding Plate, No. 2, of Mr. Beard's Machine for crooking and cutting Wires for Cards, to face page 122.
- The Plate, No. 3, of Mr. Cooke's Machine to teach Blind Persons Music, to face page 147.
- The Plate, No. 4, of Mr. Machell's Annular Saw, to face page 152.
- The Plate, No. 5, of Mr. Perry's Chirographagist, to face page 158.
- The Plate, No. 6, of Mr. Goss's Instrument to perform Addition, to face page 164.
- The Plate, No. 7, of Mr. Davis's temporary Scaffold for Painters and Plasterers, and of Mr. Martin's method of relieving a Horse from a Cart when fallen down in the Shafts, to face page 170.
- The Plate, No. 8, of Mr. King's Machine for Shoemakers, and of Mr. D. Ritchie's Pendulum, to face page 178.
- The Plate, No. 9, of Dr. Cumming's Bathing Apparatus, to face page 188.

E R R A T A.

- In page 71, line 14.—In Mr. FRANKLYN's account of his method of feeding Milch Cows, *one Penny* per day has been inserted instead of *one Shilling*, the cost of firing mentioned in the preceding Statement.
- In page 70, line 6 of the same communication—Add the following observations:—
- “ I first put some water into the boxes, and then fill them with hay cut into chaff. I add a large quantity more of water when the first water is become hot and proceed to heat it by steam. My Cows have the boiled food three times a day, I give each of them at one time three gallons of the boiled chaff, and three gallons of the liquor.”